IN THE CLAIMS

Please amend the claim as follows:

1. (Currently amended) ~~A~~ An optical router comprising:

a plurality of input ports;

a plurality of output ports;

an add port configured to input data received from a lower Internet protocol (IP) router;

a drop port configured to output data to the IP router;

a wavelength division demultiplexing section arranged to wavelength-division-demultiplex wavelength signals input through the input ports and the add port;

an input interface arranged to convert optical frames input from the wavelength division demultiplexing section into electrical signals and to convert the electrical signals to optical frames;

an optical switch configured to perform a high-speed switching of the optical frames output from the input interface;

an output interface arranged to process the optical frames switched by and output from the optical switch;

a wavelength division multiplexer arranged to wavelength-division-multiplex outputs of the output interface section and transmit the multiplexed outputs to another optical router;

a drop interface arranged to process the optical frames transmitted to the IP router via the wavelength division multiplexing section;

a header processor arranged to recognize header information and to control the optical router;

an optical switch controller arranged to control a connection state of the optical switch

and to switch the optical frames;

a header reinserter arranged to reinsert headers into outputs of the optical router, said headers being inserted at a rate such that the data frame rate is an integer number of the header rate; and

an edge traffic aggregator including [[of]] an ingress part and an egress part, the ingress part configured to convert IP packets input from the IP router into optical frames, and the egress part configured to convert the optical frames into IP packets and to transmit the converted packets to the lower IP router, and

~~wherein~~ the input interface comprises a buffer being arranged to store the electrical signals and being configured to perform synchronization

2. (Previously Presented) The optical router as claimed in claim 1, wherein the wavelength division demultiplexing section includes a plurality of wavelength division demultiplexers.

3. (Previously Presented) The optical router as claimed in claim 1, wherein the input interface comprises:

an optical receiver arranged to convert an optical frame input from the wavelength division demultiplexing section into an electrical signal;

a header length detector being coupled to the optical receiver and the buffer and being arranged to extract a header length in order to separate a header from the electrical signal;

a switch coupled to the buffer arranged to separate the header and data from the electrical signal;

a queue coupled to the switch arranged to store data separated by the switch;

an optical transmitter being coupled to the queue, being arranged to restore the electrical signal to the optical frame in order to transmit the data to the optical switch;

a header processor arranged to read an address with reference to the header of the electrical signal and determine a header output time; and

a header reinserting section arranged to insert a new header output from the header processor,

wherein the buffer is coupled to the optical receiver.

4. (Original) The optical router as claimed in claim 3, wherein a predetermined guard time is provided between the header separated from the switch and the data frame in order to prevent data loss when the header and the data frame are separated.

5. (Original) The optical router as claimed in claim 3, wherein the queue of the input interface comprises:

a plurality of electric switches arranged to switch the input data by destinations;

a plurality of buffers arranged to receive and store the data by destinations to accumulate a predetermined amount of data; and

a combiner coupled to the plurality of buffers.

6. (Original) The optical router as claimed in claim 5, wherein the plurality of buffers include at least one buffer for each possible destinations.

7. (Currently Amended) The optical router as claimed in claim 1, wherein the input interface comprises:

an optical receiver arranged to convert optical frames input from the wavelength division demultiplexing section into electrical signals;

a header length detector coupled to the optical receiver and arranged to extract a header length in order to separate headers from the electrical signal;

a switch coupled to the buffer and arranged to separate the headers and data from the electrical signals;

a queue coupled to the switch and arranged to store data separated by the switch;

a plurality of optical transmitters arranged to input data from the queue and to restore the electrical signals to optical frames in order to transmit the data to the optical switch;

a header processor arranged to read addresses with reference to the headers of the electrical signals and deciding header output times; and

a header reinserting section arranged to insert new headers output from the header processor,

wherein the buffer is coupled to the optical receiver.

8. (Original) The optical router as claimed in claim 7, wherein the buffer includes a plurality of outputs.

9. (Previously Presented) The optical router as claimed in claim 1, wherein the output interface comprises:

an optical receiver arranged to convert the optical data switched by the optical switch into an electric signal;

a buffer arranged to temporarily store the data for a header reinsertion;

a header reinserter arranged to reinsert the header; and

an optical transmitter arranged to transmit the optical data combined with the header to a next node.

10. (Previously Presented) The optical router as claimed in claim 1, wherein the output interface comprises:

a plurality of optical receivers arranged to convert the optical data switched by the optical switch into electric signals;

a plurality of buffer couple to the plurality of optical receivers, respectively, and arranged to temporarily store the data output from the plurality optical receivers for a header reinsertion;

a header reinserter arranged to reinsert the header; and

an optical transmitter arranged to transmit the optical data combined with the header to a next node.

11. (Previously Presented) The optical router as claimed in claim 1, wherein the ingress part of the edge traffic aggregator comprises:

a plurality of optical receivers arranged to receive packet data input from the lower IP router;

a plurality of packet processors coupled to the plurality of optical receivers, respectively, and arranged to perform at least a packet forwarding function;

an address table coupled to the plurality of packet processors;

a first electric switch coupled to the plurality of packet processors;

a data frame assembler, provided with a predetermined number of buffers, arranged to convert switched packets into the optical frames;

a controller and scheduler arranged to determine output orders and wavelengths of the

optical frames generated from the data frame assembler;

a second electric switch arranged to transmit the optical data of which the output order and the wavelength are determined;

a predetermined number "n" of header inserting sections arranged to insert the header before an optical modulation;

an optical transmitting section including n optical transmitters arranged to optically modulate the optical frames combined with the headers; and

a wavelength division multiplexer arranged to wavelength-division-multiplexing the optically modulated signals.

12. (Original) The optical router as claimed in claim 10, wherein the data frame assembler divides and stores the switched packets by destinations in the n buffers, and if a predetermined amount of data is accumulated, it processes the data by buffers; and

wherein the controller and scheduler detects the amount of data by buffers of the data frame assembler, and determines the output order and the wavelength of the optical frame.

13. (Original) The optical router as claimed in claim 1, wherein the egress part of the edge traffic aggregator comprises:

a wavelength division demultiplexer arranged to wavelength-division-demultiplex the wavelength-division-multiplexed optical signal dropped by the optical router;

a plurality of optical receivers arranged to convert the optical frame into the electric signal;

a data frame disassembler arranged to separate the frame in a unit of an IP packet and then separate the frame by destinations;

a scheduler arranged to control an output order of IP packets separated by destinations;

a plurality of packet processor arranged to process the IP packets through at least a forwarding process;

an address table coupled to the plurality of packet processors;

an electric switch coupled to the plurality of packet processors; and

a plurality of optical transmitters arranged to optically modulate the switched packets.

14. (Original) The optical router as claimed in claim 1, wherein the edge traffic aggregator converts the packets input from the IP router into the optical frames of a predetermined length according to addresses of destinations, the input interface processes the optical frames through an optical/electric/optical conversion, the optical switch performs a switching of the optical frames, and the output interface processes the optical frames through the optical/electric/optical conversion again and then transmits the optical frames to a next optical router node or the edge traffic aggregator.

15. (Currently amended) The optical router as claimed in claim 1, wherein the ingress part is configured to convert the packets input from the IP router into the data frames of a predetermined length according to addresses of destinations, ~~to generate headers having a speed obtained by dividing the data frame by an integer number~~, and to combine the headers with the data frames to transmit the combined optical frames.

16. (Original) The optical router as claimed in claim 1, wherein the edge traffic aggregator has the egress part which receives the optical data frames switched by the optical router, separates the received optical data frames by IP packets, and transmits the separated

optical data frames to the IP router.

17. (Previously Presented) The optical router as claimed in claim 1, wherein the input interface includes a header length detector arranged to detect a header starting point and a header length, and a header processor arranged to separate the header and the data frame to process the data frame.

18. (Original) The optical router as claimed in claim 1, wherein the output interface section includes a header reinserting section arranged to insert a new header into the data frame switched by the optical switch.